


CASE STUDY – Commissary/Meat Cutting


TASK TITLE: Commissary/Meat Cutting

Task Description:	<p>The Commissary/Meat Cutting task may be involved when working in a deli, meat-cutting counter or small meat processing facility within a commissary. Cutting methods can involve both automated equipment and manual meat cutting with a knife</p> <p>Typical jobs in which the Commissary/Meat Cutting task occurs can include (but are not necessarily limited to):</p> <ul style="list-style-type: none"> • Commissary Deli • Commissary Meat Cutting • Restaurant
Job Performance Measures Most Often Impacted by Commissary/Meat Cutting:	<p>Measures of work performance can include (but are not necessarily limited to):</p> <ul style="list-style-type: none"> • Type of cut • Quality of cut • Number of cuts
Typical Employee Comments about Commissary/Meat Cutting:	<p>Employees typically experience discomfort in the hand/wrists/arms, legs/feet, and back.</p> <p>The shoulders/neck and hands/wrists/arms are the body areas that most commonly receive a “High” priority rating. The remaining areas, with the exception of the head/eyes, are more likely to receive a “Medium” priority rating, or lower.</p>
Suggested Level II Analysis:	NIOSH Lifting Equation, Biomechanical Lifting Analysis, Push/Pull Force Analysis


Shoulder/Neck

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
1. Reaching	<ul style="list-style-type: none"> Meat placed too far from person 	41. Move work piece closer to body <ul style="list-style-type: none"> place the meat near the edge of the cutting table when cutting 	✓		low	low	low
		149. Provide appropriate tool <ul style="list-style-type: none"> use a hook type tool to pull meat closer when handing meat from one person to another person during processing 	✓		high	low	low
	<ul style="list-style-type: none"> Repetitive sawing tasks 	11. Eliminate unnecessary tasks <ul style="list-style-type: none"> install a riser on the front sliding surface of saw. This will raise the meat higher and make use of gravity to drop the meat into a collection tray. This would eliminate a repetitive throwing task and reduce the chance of severe cuts from the saw blade 	✓		low to med	high	high


Shoulder/Neck (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
2. Arm forces: Repeated arm forces or holding/carrying materials	<ul style="list-style-type: none"> Meat box is too heavy 	48. Provide a cart <ul style="list-style-type: none"> when moving boxes of meat place the box on a cart 		✓	high	med	med
		13. Encourage ergonomic work techniques <ul style="list-style-type: none"> move around the pallet rather than reach over the pallet to reach and lift boxes of meat 	✓		low	low	low
	<ul style="list-style-type: none"> Rolling/sliding resistance of cart or piece of equipment causes high forces 	19. Improve wheel condition <ul style="list-style-type: none"> repair wheels on carts or equipment 	✓		low	low	low
	<ul style="list-style-type: none"> Floor/surface condition causes high forces during a rolling or sliding task 	119. Provide wheels <ul style="list-style-type: none"> install appropriate wheels 		✓	high	med	med
	<ul style="list-style-type: none"> Meat is difficult to cut 	17. Improve floor condition <ul style="list-style-type: none"> improve housekeeping repair cracks or gaps in floor provide ramps to compensate for minor differences in floor height 	✓ ✓		low med high	low low med	low low med
		137. Sharpen blades frequently <ul style="list-style-type: none"> encourage person to frequently sharpen knife while cutting 	✓		low	med	med

Shoulder/Neck (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
3. High speed, sudden shoulder movements	<ul style="list-style-type: none"> Speed of lifting boxes of meat Repetitive sawing tasks 	48. Provide a cart <ul style="list-style-type: none"> store meat on a height adjustable cart 		✓	med	med	med
		13. Encourage ergonomic work techniques <ul style="list-style-type: none"> encourage person to use smooth, fluid movements while handling items 	✓		low	low	low
		11. Eliminate unnecessary tasks <ul style="list-style-type: none"> install a riser on the front sliding surface of saw. This will raise the meat higher and make use of gravity to drop the meat into a collection tray. This would eliminate a repetitive throwing task. 	✓		low to med	high	high
		25. Increase task variety	✓		low	low	low
		137. Sharpen blades frequently <ul style="list-style-type: none"> encourage person to frequently sharpen knife while cutting 	✓		low	low	low
4. Head/neck bent or twisted	<ul style="list-style-type: none"> Work is positioned too low 	20. Incorporate rest pauses	✓		low	low	low
		25. Increase task variety	✓		low	low	low
		83. Provide an adjustable height lift table <ul style="list-style-type: none"> provide a small stand to raise and tilt the work toward the person 	✓		low to med	low	low

Hands/Wrists/Arms

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
5. Bent wrists/repeated wrist movements or repeated forearm rotation	<ul style="list-style-type: none"> Location of the work and angle of the cut causes awkward wrist postures 	66. Provide power tool <ul style="list-style-type: none"> provide a powered knife for repetitive cutting tasks 		✓	high	med	med
		77. Provide a tool with an appropriate handle angle <ul style="list-style-type: none"> for straight horizontal cutting, use a knife with a vertical handle that encourages a neutral wrist position 	✓		med	med	med
		25. Increase task variety <ul style="list-style-type: none"> alternate meat-cutting tasks – move from a manual cutting task to more automated meat cutting on the saws or packing lines 	✓		low	low	low
		137. Sharpen blades frequently <ul style="list-style-type: none"> ensure knife is regularly sharpened while cutting 	✓		Low	Med	Med
		136. Rotate the work <ul style="list-style-type: none"> turn the meat while cutting to position the meat in a location that prevents awkward wrist postures 	✓		low	low	low

Hands/Wrists/Arms (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
	<ul style="list-style-type: none"> Repetitive sawing tasks 	11. Eliminate unnecessary tasks <ul style="list-style-type: none"> install a riser on the front sliding surface of saw. This will raise the meat higher and make use of gravity to drop the meat into a collection tray. This would eliminate a repetitive throwing task 25. Increase task variety 137. Sharpen blades frequently <ul style="list-style-type: none"> encourage person to frequently sharpen knife while cutting 	✓		low to med	high	high
			✓		low	low	low
			✓		low	low	low
6. Repeated manipulations with fingers	<ul style="list-style-type: none"> Repetitive sawing tasks 	11. Eliminate unnecessary tasks <ul style="list-style-type: none"> install a riser on the front sliding surface of saw. This will raise the meat higher and make use of gravity to drop the meat into a collection tray. This would eliminate a repetitive throwing task 25. Increase task variety 137. Sharpen blades frequently <ul style="list-style-type: none"> encourage person to frequently sharpen knife while cutting 	✓		low to med	high	high
			✓		low	low	low
			✓		low	low	low

Hands/Wrists/Arms (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
7 Hyper-extension of finger/thumb or repeated single finger activation	<ul style="list-style-type: none"> Work technique 	66. Provide power tool <ul style="list-style-type: none"> provide a powered knife for repetitive cutting tasks 		✓	high	med	med
		13. Encourage ergonomic work techniques <ul style="list-style-type: none"> hold fingers close together avoid extending fingers while cutting, such as placing thumb along top of knife 	✓ ✓		low low	low low	low low
8. Hand/grip forces	<ul style="list-style-type: none"> Meat is difficult to cut Handle is slippery Gloves are bulky and do not properly fit 	137. Sharpen blades frequently <ul style="list-style-type: none"> encourage the person to regularly sharpen knife while cutting 	✓		low	low	low
		54. Provide a high friction gripping surface <ul style="list-style-type: none"> provide a knife with a surface that improves gripping consider cutting on stainless steel surfaces 	✓	✓	med med	med med	low med
		93. Provide appropriate gloves <ul style="list-style-type: none"> use gloves that fit properly and allow for full movement of the hand 	✓		low	low	low
		<ul style="list-style-type: none"> use gloves that provide a textured surface for improved grip 		✓	low	low	low

Hands/Wrists/Arms (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
9. High speed hand/wrist/arm movements or vibration, impact or torque to the hand	<ul style="list-style-type: none"> • Use of a power knife that is poorly maintained • Repetitive sawing or slicing tasks 	34. Maintain hand tool/power tools <ul style="list-style-type: none"> • ensure powered knife is well maintained 	✓		low	med	med
		137. Sharpen blades frequently	✓		low	med	med
		11. Eliminate unnecessary tasks <ul style="list-style-type: none"> • install a riser on the front sliding surface of saw. This will raise the meat higher and make use of gravity to drop the meat into a collection tray. This would eliminate a repetitive throwing task 	✓		low to med	high	high
		25. Increase task variety	✓		low	low	low
		137. Sharpen blades frequently <ul style="list-style-type: none"> • encourage person to frequently sharpen blades while cutting 	✓		low	low	low

Hands/Wrists/Arms (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
10. Exposure to hard edges	<ul style="list-style-type: none"> Hook has a small handle or hard edges on the handle 	149. Provide appropriate tools <ul style="list-style-type: none"> provide a D handle instead of a T handle increase handle diameter to 1-1½" (2.5-2.8cm) 		✓	med	low	low
				✓	low to med	low	low
11. Hands and fingers exposed to cold temperatures	<ul style="list-style-type: none"> Work area is too cold 	93. Provide appropriate gloves <ul style="list-style-type: none"> use gloves that fit properly, do not restrict movement of the hand, and use a textured surface for improved grip provide gloves which insulate hands and provide a moisture barrier 	✓		low	low	low
			✓		low	low	low

Back/Torso

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
12. Repeated forward or sideways bending movements	• Object is too low	124. Raise the work piece/work surface					
		• place boxes of meat on pallets to raise the boxes off the floor surface	✓		low	low	low
		• place pallet of boxes on a height adjustable scissor lift		✓	high	med	med
	• Object is too far away	• ensure heavy items are placed between knee and waist height for easy handling	✓		low	low	low
		41. Move work piece closer to body					
		• pull meat to edge of table	✓		low	low	low
	• There is no place to store the case of meat at the workstation	12. Provide adequate workspace					
		• ensure space is provided around all four sides of the pallet so that the individual can move in close enough to the item stored on the pallet	✓		low	low	low
		24. Increase size of work surface					
		• rearrange work station to provide additional storage space	✓		low	med	med
		• provide larger work surface area		✓	med	med	med
		124. Raise the work piece/work surface					
		• place meat at a table	✓		low to med	med	med
		48. Provide a cart					
		• store meat on an adjustable cart		✓	med	med	med


Back/Torso (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
	<ul style="list-style-type: none"> Person tends to use the back to lift instead of using the legs to assist in the lift. Check to make sure that there is no contributing factor in the workplace. 	130. Reduce angle a person turns to transfer items <ul style="list-style-type: none"> place adjacent work surfaces at 90 degrees to one another 48. Provide a cart <ul style="list-style-type: none"> provide a cart with height adjustable shelves 13. Encourage ergonomic work techniques <ul style="list-style-type: none"> provide training on ergonomics principles and lifting techniques encourage person to use leg muscles to lift 		✓ 	med 	med 	med
13. Twisting of the lower back	<ul style="list-style-type: none"> Person tends to twist with the back instead of using the legs and feet to pivot 	130. Reduce angle a person turns to transfer items <ul style="list-style-type: none"> place adjacent work surfaces at 90 degrees to one another 13. Encourage ergonomic work techniques <ul style="list-style-type: none"> provide training on ergonomics principles and lifting techniques encourage person to use legs to pivot when handling a load 		✓ 	med 	med 	med


Back/Torso (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
14. High speed, sudden movements or Lifting awkward, uneven, shifting or bulky items	<ul style="list-style-type: none"> Lifting cases of meat Box or meat is frozen to storage surface making it difficult to move Person tends to lift with a jerky motion instead of a smooth motion 	4. Change a lifting/carrying task into a rolling or sliding task <ul style="list-style-type: none"> provide a height adjustable cart for transporting cases of meat 		✓	med	med	med
		128. Reduce force required to install or remove component <ul style="list-style-type: none"> Put a covering on the shelves to reduce friction 	✓		low	med	med
		11. Eliminate unnecessary tasks <ul style="list-style-type: none"> place meat in containers to eliminate removal directly from shelves 	✓		low	med	med
		149. Provide appropriate tools <ul style="list-style-type: none"> provide a wedge or prybar that can be used to pry frozen boxes of meat apart 	✓		med	low	low
		61. Provide a mechanical lifting aid <ul style="list-style-type: none"> provide a vacu-hoist or other means of mechanical assistance to move objects 		✓	med	low	low

Back/Torso (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
	<ul style="list-style-type: none"> Person tends to lift with a jerky motion instead of a smooth motion (continued) 	13. Encourage ergonomic work techniques <ul style="list-style-type: none"> encourage person to use smooth, fluid movements while handling items 	✓		low	low	low
	<ul style="list-style-type: none"> Loading hamburger into processing equipment 	30. Provide a mechanical lifting aid <ul style="list-style-type: none"> provide a mechanical dumping device to load hamburger 		✓	med	low	low
15. Static, awkward back postures	<ul style="list-style-type: none"> Work location too low 	124. Raise the work piece/work surface <ul style="list-style-type: none"> raise the worktable to encourage more neutral positions of the back. The task location should be just below elbow height for light cutting, and approximately 2-4"(5.1-10.2cm) below elbow height for heavy cutting of cold meat 		✓	high	med	med


Back/Torso (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
16. Lifting forces	<ul style="list-style-type: none"> Lifting cases of meat  <ul style="list-style-type: none"> Loading hamburger into processing equipment 	4. Change a lifting/carrying task into a rolling or sliding task		✓	med	med	med
		<ul style="list-style-type: none"> provide a height adjustable cart for transporting cases of meat 					
		20. Incorporate rest pauses	✓		low	low	low
		61. Provide a mechanical lift device		✓	med	low	low
		<ul style="list-style-type: none"> provide a mechanical dumping device to load hamburger 					
		131. Reduce weight of work piece (boxes of meat)	✓		low	low	low
		<ul style="list-style-type: none"> avoid over-packing trays of wrapped meat investigate the feasibility of ordering meat in smaller box sizes 		✓	low	low	low
		142. Use two or more persons to perform the transfer	✓		low	low	low

Back/Torso (cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
17. Pushing or pulling	<ul style="list-style-type: none"> Rolling/sliding resistance of car or piece of equipment causes high forces Cart or piece of equipment is too heavy to be pushed manually Floor/surface condition causes high forces during a rolling or sliding task 	119. Provide wheels <ul style="list-style-type: none"> provide wheels with appropriate bearings and tread composition 	✓		low	low	low
		19. Improve wheel condition <ul style="list-style-type: none"> repair wheels on carts or equipment 	✓		low	low	low
		67. Provide a powered cart <ul style="list-style-type: none"> provide motorized assistance to transport cart or piece of equipment 		✓	high	med	med
		17. Improve floor condition <ul style="list-style-type: none"> improve housekeeping repair cracks or gaps in floor provide ramps to compensate for minor differences in floor height 	✓ ✓	✓	low low high	low low med	low med med
18. Whole body vibration	<ul style="list-style-type: none"> Rarely occurs 	N/A					

Legs/Feet

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
19. Fixed position, standing	<ul style="list-style-type: none"> Worker stands in one position 	52. Provide a footrest or footrail <ul style="list-style-type: none"> provide a footrail or footrest under the work surface so the individual can elevate one leg while standing, encouraging a more neutral position of the back 	✓	✓	med	med	med
		96. Provide appropriate shoe inserts	✓		low	low	low
20. Exposure to hard edges on legs, knees, and feet <u>or</u> Standing on hard surfaces	<ul style="list-style-type: none"> Prolong standing Leans into edge of table 	86. Provide an appropriate anti-fatigue mat		✓	med	med	med
		9. Eliminate exposure to hard edges <ul style="list-style-type: none"> redesign or round the front edge of worksurface 	✓		low to med	low	med

Legs/Feet(cont'd)

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
21. Awkward leg postures	<ul style="list-style-type: none"> Inadequate legroom under the surface restricts leg position 	80. Provide adequate leg clearance	✓		low	low	low
22. Awkward foot postures	<ul style="list-style-type: none"> Operates a foot pedal while standing 	145. Modify foot pedal <ul style="list-style-type: none"> recess foot pedal into floor surface provide a foot pedal that is a low profile design, reducing the need to flex the ankle 		✓ ✓	high med to high	low med	med med

Head/Eyes

Job Factor	Potential Causes	Corrective Action	Level of Changes		Cost	Impact On	
			✓ Minor Modification	✓ Major Change		Quality	Productivity
23. Difficult to see/light levels too low/too high	<ul style="list-style-type: none"> Rarely occurs 	18. Increase visual access to work <ul style="list-style-type: none"> light levels should be 100-175 fc for work 		✓	low to med	med	med
24. Intensive visual tasks, staring at work objects for long periods	<ul style="list-style-type: none"> Rarely occurs 	N/A					

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